

approach

MAY 1981 THE NAVAL AVIATION SAFETY REVIEW



DATA ON SOME COMMON DRUGS



Drug	"Average" Time Drug Is Still Detectable in Body
Alcohol (wine, beer, "hard" alcohol, mixed drinks, etc.)	1 "standard" drink — 3-4 hours
Opiates (Codeine, heroin, morphine, etc.)	5 days
Barbiturates ("downers")	2-10 days (depends on drug)
Hallucinogens (PCP, LSD, peyote, etc.)	48 hours
Amphetamines ("uppers")	48 hours
Cocaine ("snow")	48 hours
Methaqualone (Quaalude)	72 hours
Marijuana (THC) (also hashish)	4 hours to 10 days



approach

NAVAIR 00-75-510



The Alpha Jet on this month's cover is Lockheed-California Company's contender for the VTX program. Photograph by Glen Sunderland courtesy of Lockheed-California Company.

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► Pinpointing the

VIOLATORS

By Russ Forbush
APPROACH Writer

COULD you, as an aircrewmember, tolerate flying with a pilot who regularly jeopardized your life by violating flight rules and regulations? And how about you supervisors and COs—if you had an inkling that this was going on, would you act immediately to correct the situation? It's probable that the overwhelming majority of you would answer the first question in the negative and the second in the affirmative. Good show! But, unfortunately, not quite good enough. Without a 100 percent favorable response to these questions, we've got problems!

And the problems are manifold. They begin with the pilot and extend to his flightcrew and all levels of supervision within the command. In other words, a pilot could not continue to circumvent SOP without the help or tacit acceptance of others. To best illustrate this, the pilot history of two naval aviators (one helo, one fixed-wing) is presented. Both willfully violated flight regulations over a period of time, and each was involved in an aircraft mishap which resulted in multiple fatalities. The model aircraft flown are not important to this article and will not be specifically discussed.

The Helicopter Pilot. The events which follow span a period of about 3½ years.

After leaving the Training Command, this pilot reported to the FMF to commence operational flight training in a helicopter. He completed this training in 5 months and was designated an H2P. He was then transferred to his first Marine Corps helicopter squadron as a replacement pilot.

Some 11 months later, his reporting senior noted a shift toward overaggressiveness on his part and an inability to recognize personal shortcomings. He was subsequently counseled by both his reporting senior and his CO concerning deficient flight performance and an inflated sense of confidence in his flying abilities. The following month he was transferred to a second helo squadron as an H2P. (The safety manager from his first squadron also joined this squadron and advised the CO that this pilot should not be designated a HAC while attached to this squadron, as they were scheduled for an extended shipboard deployment.)

Following deployment, the pilot was returned to his first squadron as an H2P. During the next 3 months, he flew

several training flights with the squadron and was finally designated a HAC. A total of 27 months had elapsed between the time the pilot commenced initial qualification training and his achievement of HAC designation. He was immediately transferred to a third helo squadron as a HAC for his second shipboard deployment. Two weeks later, the COs of his original squadron and the third squadron were notified by the squadrons' flight surgeons that the pilot had exhibited tendencies associated with a "failing aviator" (egocentric, resentful of authority, low tolerance for tension, etc. See MAR '77 APPROACH article on this subject). A subsequent consultation with a psychiatrist produced the opinion that the pilot was not a "failing aviator."

The pilot completed the 6-month deployment without incident and was again returned to his original squadron. The next month, he failed selection for promotion.

During the next few months, he was used as an instructor pilot and PMFC pilot. Upon completion of this duty, the pilot was assigned to a fourth helo squadron, a headquarters and maintenance squadron, and because this was a staff billet, his maintenance checkpilot and instructor pilot status was terminated. However, just prior to transfer, his checkpilot designation had been revoked by his original squadron because he was observed by the XO performing a pedal turn (turn on the spot) at an excessive rate. At an interview with the CO, he admitted, "The aircraft got away from me."

Two days prior to his fatal mishap, the pilot flew a low-level mission from 200 feet down to "brush top" height at airspeeds varying from 0 to 120 KIAS. Angles-of-bank in turns reached 45 degrees, and G-loading was sufficient to cause discomfort to experienced crewmen in the aircraft. The crew chief later indicated that at times he thought the rotor blades would contact the ground. These maneuvers were not authorized and, in fact, were in direct violation of SOP. No one on the crew reported the violations at the time.

The scheduled mission on the day of the mishap was the transporting of cargo (including fuel) and passengers to various sites in the area. The helo made two stops to drop off cargo and then proceeded to a ground unit command post (CP). The CP was surrounded by gently sloping terrain with a ravine and hill on one side. The pilot approached the landing zone at low altitude and executed a crosswind approach with a pedal turn on final to land downwind. Following the delivery of some cargo and passengers, the pilot commenced takeoff. He lifted from the landing zone, rotated 20 to 30 degrees nose-low, raised the landing gear, and began accelerating. The aircraft descended 30 to 50 feet into the ravine, and upon reaching its southern wall, the pilot performed a pitch-up maneuver to a steep noseup attitude. The aircraft then executed a rapid roll into an extremely high angle-of-bank to the right. This was followed by a very tight 180-degree turn to the right just above the trees. The main rotor blades contacted the trees at the 90-degree position of turn, and the aircraft descended into the trees in a right slip. The pilot and several others onboard the aircraft lost their lives.



There were many insidious elements present during this pilot's operational squadron tours. Every time he joined or rejoined a squadron, the CO was new and unfamiliar with any problems, personal or professional, that the pilot was experiencing. At each juncture of the pilot's aviation development, there was no documentation made in nonmedical records to indicate to the CO that he was experiencing problems which might have an effect on his aeronautical abilities. When rumors did surface that the pilot was using overly aggressive flight techniques, the CO would schedule him to fly with senior pilots. In every case in recent years, the senior aviator would report that the pilot was conscientious and flew the aircraft in a professional manner. Although he was suspected of flying in an unsafe manner, there was a lack of documentation to prove it. As the pilot gained experience, it became even more difficult to pinpoint his deficiencies. The reason for this was that he apparently restricted his performance of unauthorized maneuvers to flights when he had a contemporary or subordinate as his copilot. These junior pilots either approved of his activities or were reluctant to "blow the whistle" on him.

Continued

The Fixed-wing Pilot. For the first half of his squadron tour, this pilot performed like a pro. From the time he first joined the squadron, he was known for his ability to make decisions, and he inspired an intensely loyal following among some of the junior officers. He was regarded as an average to above-average "stick," an acknowledged expert in his aircraft's systems, and was well recognized for his thorough preparedness for all assigned flights. He was driven by a strong desire to excel and enjoyed personal recognition. Being idealistic by nature, however, he found it difficult to tolerate imperfection in others.

The pilot progressed nicely for the first couple of years. He liked the challenge of reaching career plateaus at an accelerated pace. He rapidly attained aircraft commander (AC) and mission commander (MC) status, was an instructor pilot (IP) for over a year, and served as the pilot training officer.

By mid-tour, however, he had grown dissatisfied and openly voiced his disagreement with the Navy's management system and the squadron's department-level decisionmaking. His strong feelings in these areas led him to the decision to resign his commission.

About a year before the fatal mishap, he began to exhibit numerous procedural and headwork errors that were entirely out of character with the image he had fostered in the squadron. His vocal negativism with regard to senior officers had caused concern among his superiors because it was directed to his small but select group of peers over whom he held much influence. He was counseled accordingly by his CO.

The first incident demonstrating a lack of good judgment occurred during the squadron's last deployment. The pilot was assigned to a crew in which he was junior to the NFO mission commander (MC). The aircraft was inbound to a group of unidentified surface targets when the NFO noted that the aircraft was approaching a foreign ADIZ. The brief had specifically stated that under no circumstances was this ADIZ to be penetrated without clearance. The NFO advised the pilot to break off the run, but the pilot apparently decided that photographing the targets was more important. He continued inbound. At this point, the NFO exchanged words with the pilot and had to issue a direct order to break off before the run was finally discontinued. At mission debrief, the possible ADIZ penetration was reported to the debriefing officer, but

the NFO decided to handle this breach of flight discipline at the crew level, and there was no evidence that the report was forwarded beyond the debriefing officer level.

Following deployment, the pilot took a cross-country training flight to an NAS near his hometown. Upon arrival, he was met by his father and other friends. After most of the crew had left the area, this pilot, without authorization, took his father and two other civilians for a ride in the aircraft. Knowledge of this event was privy only to the participants.

On the weekend prior to the mishap, the pilot was a passenger on a flight to the midwest. The purpose of the flight was to allow college students to tour the aircraft. Prior to takeoff for Homebase, the AC decided he would give the students a demonstration of the aircraft's performance. He asked the pilot under discussion here to assist him, as the assigned copilot wasn't as experienced. Upon takeoff, the AC cleaned up the bird, accelerated downwind, and then executed an unauthorized, high-speed, low pass down the runway. In an interview with the AC following the fatal mishap, it was learned that the mishap pilot had chided the AC for not flying lower and faster. This incident was not reported to the command, and once again, the lines of communication were too short.

Other belated revelations concerning this pilot's flying habits indicated that he used routine training flights to demonstrate to others what the aircraft "really" could do. Flat-hatting, obstacle takeoffs/landings, low-altitude/high-speed passes, and sucking the gear and flaps up immediately after takeoff were common practices for this pilot.

This brings us to the point of the pilot's final mission, one for which he volunteered. It consisted of transporting a specified number of Navy personnel to a city which would be holding commemorative ceremonies in honor of its anniversary. Additionally, the aircraft was to provide a stable jump platform on the day of the ceremonies. The CO had made it plain to the pilot prior to departure from Homebase that the aircraft was not part of the airshow but only a stable platform for the parachutists.

The aircraft departed Homebase with a full load of passengers and crew. There would be an en route stopover. Two of the passengers (not part of the official party) were notified that they would be bumped at the en route stopover since two other passengers had to be picked up. The pilot changed his mind, however, and decided that he would not bump the two passengers who had made the initial flight. The following morning the aircraft departed with two more passengers than allowed by NATOPS. When queried by the navigator, the pilot's reasoning for this was that "the aircraft is operating like an airliner, and the airlines don't carry parachutes." Additionally, the two new passengers received no briefing on ditching stations or survival equipment.

Upon landing at destination, the pilot executed a short-field landing reversal technique by rapidly pulling the engines



into reverse prior to the nosewheel touching the runway. This was an entirely unnecessary procedure since the runway was more than long enough for a normal landing.

The crew buttoned up the aircraft for the night and left for the local hotel. The pilot and crew had several drinks during the "welcome aboard" party. The party progressed past midnight, and the pilot was one of the participants who remained.

On the way to the morning brief, the pilot offered the aide of one of the dignitaries the chance to go on the mission flight. Fortunately, the aide declined the invitation. At the airport, the aircraft was preflighted, and mission briefing commenced. The observers briefed their portion of the flight, and the need for safety was emphasized. The flightcrew, however, did not brief ditching stations, failed to brief the weather, and filed no flight plan for the upcoming mission.

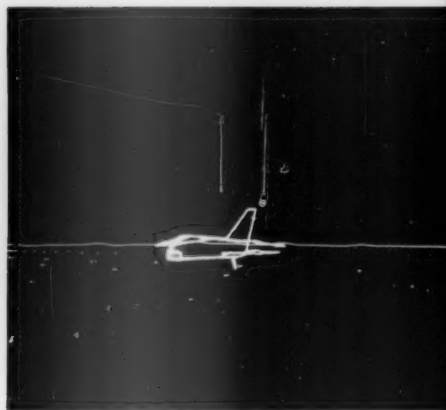
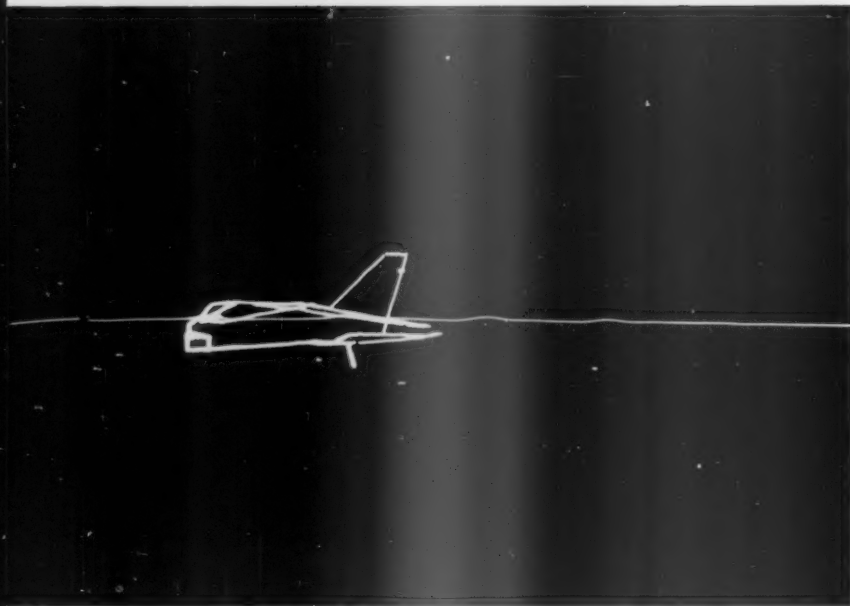
The aircraft took off, and the parachutists completed their jump as planned, without incident. While it can never be unequivocally proven, the pilot evidently decided to wrap up the airshow by making a low pass in front of the assembled crowd. The aircraft was observed clearing an 800-foot ridge line and then commenced its **final descent** in the approach-flap configuration at about 190 KIAS. The aircraft appeared to level between 200 and 500 feet when, suddenly, it impacted a cable and crashed, fatally injuring all onboard. The pilot's overwhelming desire to be a crowd pleaser won out over good judgment.

The Message. Why do tragic mishaps such as those described above have to occur before a pilot's lack of air discipline and penchant for unsafe practices are revealed? This is, and always has been, one of the most serious problems confronting commanding officers. Moreover, it's a problem that all aviation squadrons share to a greater or lesser extent.

Both of the above pilots had been exhibiting behavior symptomatic of unsafe, unsound, and dangerous flying practices well prior to the date of the mishaps. These ranged from joyriding and flathatting to taking needless chances with their crew and aircraft. That these attitudes and tendencies were known fully only to their peers and contemporaries is the real tragedy. Had there been a working squadron communications structure — both vertical and lateral — the commands would have been more aware of these dangerous practices and had the opportunity to counsel and provide guidance.

Loyalty to the command must prevail over loyalty to the individual. Supervisors at **all levels** must be on the alert for pilots who display signs of safety degradation. In short, naval aviation requires that you be your brother's keeper.

NEW



"RIGHT for lineup," "Little attitude," Ka — Wham! Another 20+-ton, \$10+ million aircraft lands on (or collides with, depending on your point of view) a \$1.0+ billion bird farm with one or more very interested participants inside the plane. The fact that it's dark and a little foggy has been compensated for by a skilled, experienced aircrew, talented CCA personnel, and — yes — an LSO!

Routine ops? Sure — about as routine as brain surgery to most of the world, but it *is* routine in naval aviation. What makes it routine? Already stated — aircrew, CATCC and Paddles — **well-trained** and **capable** aircrew, CATCC and Paddles, that is. Those are the catchwords — **well-trained** and **capable**!

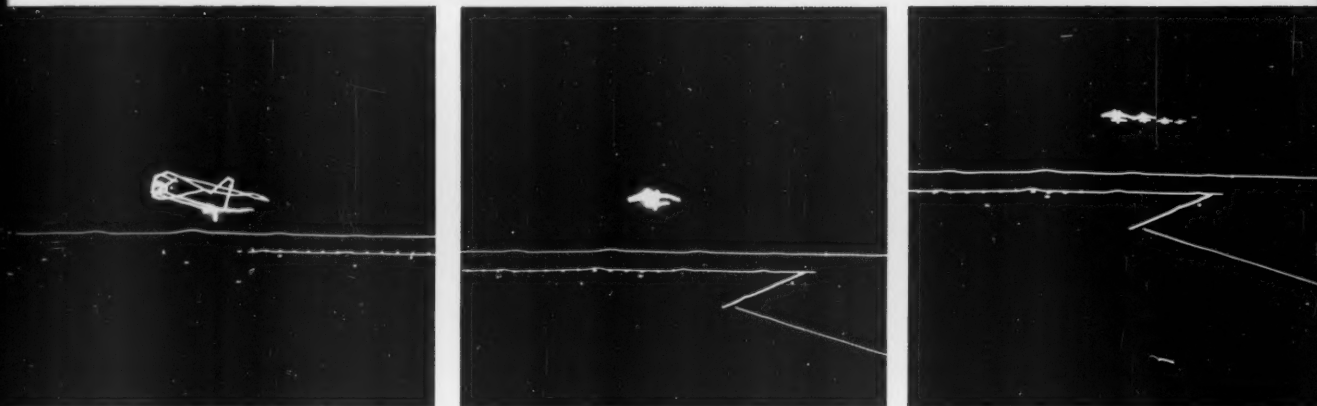
Now, we all know that naval aviation flight training is the best anywhere. Our neighbors from all over the free world have sent fledgling pilots to Pensacola for many years. And as far as our CATCC folks are concerned, where else can

you find people who can walk, chew gum, pat their bellies and rub their heads, juggle four eggs and talk to two dozen airplanes at the same time? The bottom line is now being approached — what about the responsibilities, training and, yes, capabilities of our LSOs?

First off, let's delineate the three major responsibilities of the LSO. Mr. J. T. Hooks and Dr. R. J. Petersen, in a paper on this topic, state very clearly and correctly that "The Navy's Landing Signal Officer (LSO) plays a critical role in the effectiveness level of the carrier strike force. He is responsible for the safe and expeditious recovery of aircraft. He is also responsible for training carrier pilots and **prospective LSOs**." We're all reasonably knowledgeable about how the LSO assists in aircraft recoveries and how he helps to train aviators and aircrews for carrier operations. But, unless you are one, most naval aviators/NFOs really don't appreciate or fully understand how an LSO perpetuates his race — in other words,

LSO TRAINER

By CDR William J. Isenhour
Naval Safety Center



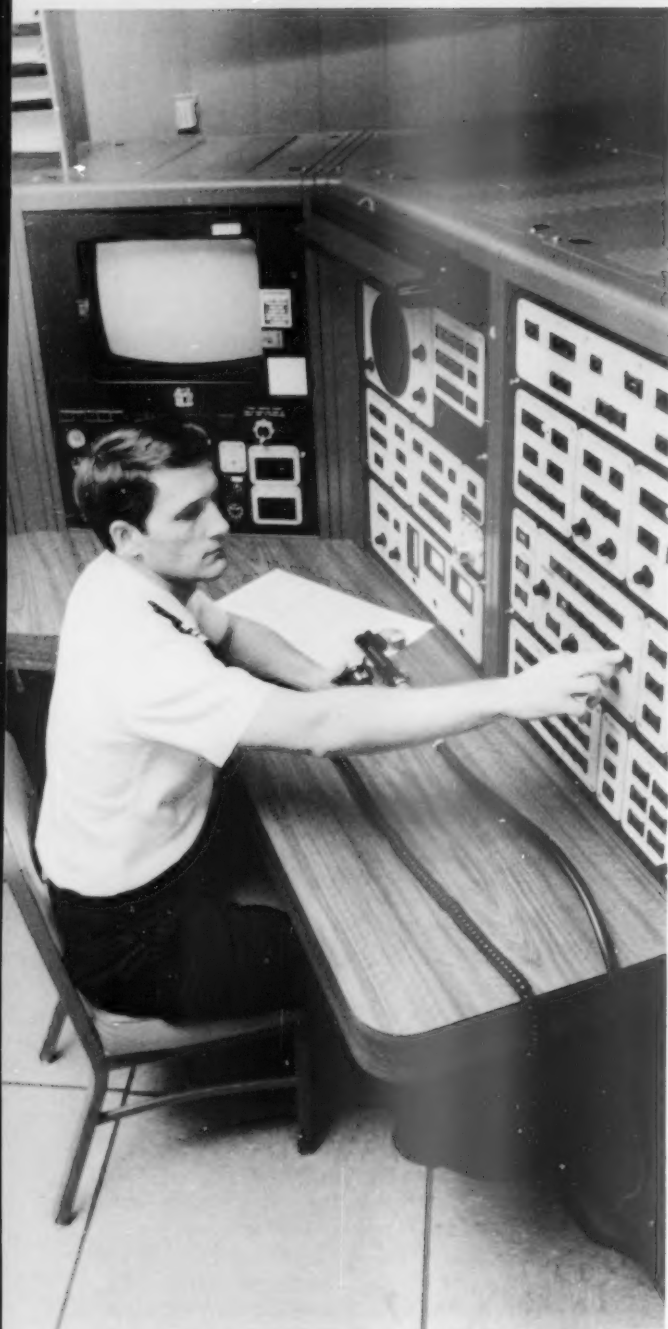
Viewed from right to left, this photo sequence shows the computer-generated A-7 being "waved" by prospective LSOs in the new reverse display trainer.

how he trains rookies.

Regardless of the complexity and difficulty of the LSO's job, LSO training has remained essentially unchanged and unimproved for decades. It's still performed at an informal, on-the-job level with many individual differences and subjectivities of the instructors, resulting in a fairly wide spectrum of training success and effectiveness. "Over the years," states Mr. Gail J. Borden, in one of his many excellent papers concerning the multiple facets of naval aviation, "the LSO community has recognized the need to improve training and has made several attempts to initiate studies. However, until recently these attempts have been unsuccessful." Historical evidence shows that although there had been LSO schools at Jacksonville and Pensacola in the late '40s and '50s, the Phase I training of LSOs subsequently was returned to the type commanders. In 1973, CNO sponsored a conference to establish a single Phase I School in Pensacola. In 1976, the opera-

tional requirement for a Carrier Aircraft Recovery Simulator (CARS) to support LSO training was submitted. In '77, the proposal for developing an LSO training station to be computer-linked with the A-7E Night Carrier Landing Trainer and function as a reverse display was made, and in 1979, this system became operational at both NAS Cecil Field and NAS Lemoore. Finally, in August 1980, the Navy's LSO school was relocated at NAS Cecil. And therein lies the story.

As pilots, RIOs, RANs, BNs, and TACCOs, we are blessed with a collection of simulators, training aids, lesson plans and the like that virtually cover the waterfront. Would you believe that it takes at least as long to take a non-LSO and teach him the trade as it does to train any of the above listed airplane operators? And, until now, it has been almost exclusively an OJT process. But, saints preserve us, the reverse display trainer, in combination with the A-7E NCLT, gives us as realistic and capable a training device for LSOs as any of the



LCDR Jerry Singleton, OINC of the LSO school, operates the instructor console of the LSO trainer.

simulators for the other aviation communities. Let's take a look at the RD/NCLT, how it works, and who makes it work.

FASOTRAGRULANT Det Cecil actually owns the LSO trainer, along with other training devices. LCDR Gene Dehnert, an old Spad driver who saw the light and went A-4/A-7, is the very capable OINC. He and his people have made available the support required to make a complete system such as the RD/NCLT work. During my recent 3-day visit to Det Cecil, not one minute of utilization was lost due to maintenance downtime.

The head man actually doing the training is LCDR Jerry B. Singleton, the officer-in-charge of the LSO school. Jerry has all the tools to qualify him for this extremely important and demanding position: squadron and wing LSO assignments, much combat time, 500+ traps, 2,300 hours of flight time with no dings, and time in A-7, A-4, F-8, F-14, E-2, S-3, and training aircraft. As Paddles, he holds day/night quals in all fleet aircraft. But, more important than all the above, he recognizes just how important qualified LSOs are and is totally dedicated to this training program.

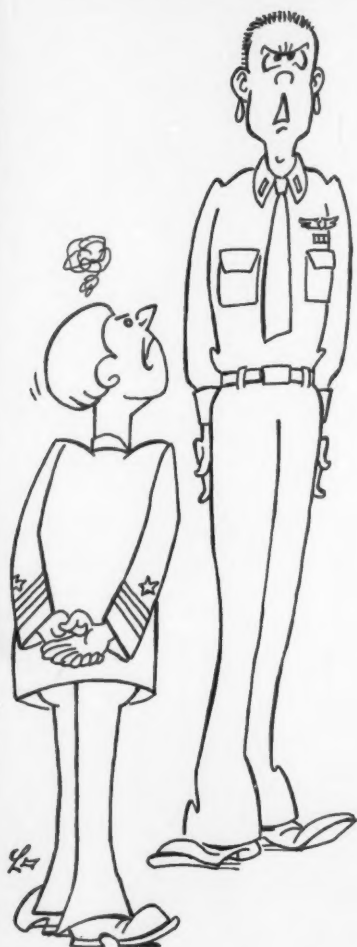
Assisting LCDR Singleton in the conduct of LSO training is Maj Ted Lyons, USMC. Ted is a combat-seasoned, carrier-experienced A-6 driver who was attached to CAG-14 on Yankee Station in '72-'73. He holds LSO quals in A-6, F-4, A-5, A-7, C-1, and E-2 aircraft and constantly has been in the USMC LSO business since 1973.

Now a look at the trainer! Without attempting to get technical, the LSO simulator is an A-7 night carrier landing trainer coupled to an LSO platform with a cathode ray tube display. A computer and a control console provide the interface. What this really means is that a pilot "flies" the A-7 simulator, an instructor at the console controls things like visibility, deck motion, and wind, and Paddles (in training) sees the aircraft as it makes its approach and provides assistance as needed.

Is it realistic? You better believe it! As an LSO (slightly out of the past), I was invited to simply stand in the trainee's spot and watch Maj Lyons as he made a pass. I simply couldn't believe the realism, up to and including the piped-in noise. When Ted went a little low in-close, I automatically gave him an attitude call. I firmly believe that an LSO trainee can gain a cruise's worth of knowledge and experience at this school in a couple of weeks. He will be allowed to make decisions (and mistakes that have no place in the real world) and really learn the trade.

So the bottom line is, if you want to be/train/have an LSO, get yourself some time at the *Jerry and Ted Show*. It's as good a training system and environment as there is to be found. Contact LCDR Jerry Singleton or Maj Ted Lyons, LSO School, NAS Cecil Field, FL 32215 (Autovon 860 6267) for scheduling, information, and anything else you can think of concerning LSO training. ◀

**Cap,
knit, blue
(watchcap),
NSN 8405-
01-006-1074,
ea. \$2.08**



"Sir, I do not wear a watchcap anymore — and these are not ear adornments, they are icicles."

THE temperature is -10°F and the Arctic wind has pushed the windchill factor down to -41°F. It's the middle of winter at NAS Midwest. I just got over a bad cold, and this weather sure doesn't help any. I'm as bundled up as I can be, watchcap pulled down over my ears and muffler tightly wrapped around my neck, as I battle this snowstorm on my way into the squadron. Finally inside — quick, give me some coffee — somebody build a fire or something. God, it's cold! If I didn't know better, I'd swear I was in Pt. Barrow, Alaska. I'm just now warming up. I can feel my fingers again. "Good morning, skipper. Say again?"

"Why don't you start acting like a naval officer and wear a proper Navy cover from now on?"

Hmmm . . . as a naval officer I realize that wearing the uniform properly is a military regulation. But as the safety officer, I must comment that wearing a combination or garrison cap in weather like this must be some sort of safety violation; in high-wind conditions they become FOD hazards, and in subzero temperatures they present a personal safety hazard — frostbite and chilblains to the ears. As a safety school graduate, I must attempt to resolve this problem. First, let's identify the problem areas:

1. Ears — cold, frostbite, chilblains, and aches to the ears are encountered when using the combination or garrison caps in subzero temperatures; and
2. FOD — These caps are susceptible to being blown off by high winds.

Discussion. The FOD problem may be eliminated by not wearing these caps in high-wind conditions. However, in subzero temperatures, cold weather survival recommends wearing a hat to help retain body heat. So it appears that some type of hat, suitable for cold weather and high-wind conditions, is necessary.

Background. The uniform regulations authorize the combination cap, garrison cap, and tropical helmet, none of which is adequate. The command ball cap is an authorized modification but also unsuitable. There is a black leather, pile-lined cap with ear flaps that may be worn only when authorized by the prescribing authority. That would do the job, but I've never seen one. How about this "cap, knit, blue (watchcap)"? Great, but it's not authorized for officers.

Conclusion. The casual scientific observer would probably conclude that officers are not susceptible to frostbite, chilblains, and earaches because officers' ears are of superior construction to enlisted ears, or because officers are just tougher — they can hack it. However, medical investigation has shown there are no physiological differences between officer and enlisted ears. And psychologists are not in agreement on the issue of whether officers are better able to withstand colder temperatures than enlisted.

Action

A. I request that the Navy provide or authorize a cover for officers that meets the following requirements:

1. Provides adequate warmth to the cranial and auricular appendages in below-freezing weather;
2. Is not susceptible to being displaced in high-wind conditions (FOD hazard) and therefore may be worn on a flight line; and
3. Can be color coordinated with naval officers' winter working blue uniforms.

Note: The above description meets the title of this article.

B. Until a cap that meets the requirements set forth in paragraph A is procured, the following warnings will be attached to the forward inside sweatband of the combination cap and the forward inside port and starboard sweatband of the garrison cover:

1. "Warning — prolonged use of this cap in below 0°F temperatures may subject the user to frostbite and/or chilblains to the cranial and auricular appendages."

2. (a) For the garrison cap: "Warning — FOD hazard — this cap is subject to being displaced by a crosswind exceeding 10 knots."

(b) For the combination cap: "Warning — FOD hazard — this cap is subject to being displaced by high-wind conditions from any direction. Use of the chinstrap is mandatory in wind conditions exceeding 15 knots."

C. Warning tags described in paragraph B will be on reflective tape with phosphorescent letters enabling them to be seen by the user before each installation of subject cap, day or night.

Mousesicle

B

BRAVO



LCDR Dan Ryan

LCDR Dan Ryan and LCDR Buzz Barker

FOLLOWING a night touch-and-go landing in an E-2B, the control column jerked violently full forward as the aircraft reached 200 feet on climbout. As the aircraft pitched nosedown and started to settle, LCDR Barker, pilot at the controls, applied full aft pressure on the controls. The control column was very difficult to move and had little effect on aircraft attitude. The plane commander, LCDR Dan Ryan, took control from the copilot's seat to determine whether the problem was isolated in the pilot's controls. Only by applying full force was he able to establish a climb. With almost no elevator authority and the requirement for both pilots to apply full back pressure on the control column, flying the aircraft called for great skill and crew coordination. Using power and rudder to compensate for lack of elevator control, LCDR Ryan handled the controls and power while LCDR Barker operated the gear, extended the hook, lowered minimum required flaps, completed the checklists, and made the necessary radio calls. Frequently on final approach, LCDR Ryan had to apply full power to keep the nose up.

Postflight inspection revealed that the screw jack and rod end of the pitch trim actuator had completely disconnected from the motor assembly — an unusual malfunction for which no procedures had been prescribed. By their superior airmanship and professionalism, LCDRs Barker and Ryan averted certain disaster.

Capt James Cartwright and 1st Lt Pete Johnston

CAPT James Cartwright and his RIO, 1st Lt Pete Johnston, departed Cubi Point NAS as the second F-4 in a flight of two *Phantoms*. The mission was a two-versus-two dissimilar air combat maneuvering hop.

The flight had progressed normally through two engagements with the adversary aircraft. During the third engagement, Capt Cartwright entered a slightly nose-low starboard turn at 12,000 feet, 380 KIAS, applying 4G. After 135

degrees of turn, he noticed what he assumed to be pieces of the aircraft passing over the starboard wing. At this time, the aircraft suddenly departed to starboard. The severity of the departure was such that Capt Cartwright was thrown violently about the cockpit, cracking his helmet visor against the canopy rail.

The aircraft finally stabilized in a 60-degree nose-low starboard spiral. The pilot regained control of his aircraft and immediately declared an emergency while turning back toward Cubi Point. His wingman joined up and visually inspected the crippled F-4, reporting that the starboard inboard missile/ordnance pylon was missing and that the outboard leading edge of the starboard wing was severely damaged.

Bleed air was secured and a controllability check was performed with the gear down and flaps up. The starboard wing stalled at 210 KIAS. Meanwhile, 1st Lt Johnston reviewed NATOPS procedures and discussed possible control/landing emergencies. Capt Cartwright executed a 220-knot, no-flaps, straight-in approach to a midfield E-28 engagement.

A violent departure at 12,000 feet with pieces of the aircraft departing is anything but a routine occurrence. By successfully controlling a potentially disastrous situation, Capt Cartwright and 1st Lt Johnston displayed the coolness and professionalism that comes from thorough flight preparation. An F-4 and, quite possibly, two lives were saved!

LT Julius Longfellow and LTJG Kevin Clark

TAKE an E-28 crew returning to the carrier at night, with no moon and no horizon. Add heavy seas and a pitching deck and you have a crew faced with not only the usual tension of a night recovery but a little extra thrown in for good measure. This was the situation facing LT Julius Longfellow (pilot), LTJG Kevin Clark (copilot), LCDR Bob McClendon, LT Steve Johnson, and AT2 Tom Dugan of VAW-116 as they returned to the carrier for a Case III recovery.

The heavy seas and pitching deck resulted from a typhoon that the carrier was skirting. During the initial part of the Case III approach, the CAINS (Carrier Aligned Inertial Navigation System) failed. This left only the HARS (Heading Attitude Reference System) to supply power to the RMI and the attitude gyro. Both pilots noted the failure and switched to the standby system.

On their first approach, the pilots picked up the ball at 3/4-mile and were informed by the LSO that the deck was pitching. On the first landing, the E-2 went slightly high over the wires and the LSO called "Bolter, bolter!" As LT Longfellow added power, he heard the air boss transmit, "601, you've got a fire in your engine." The CICO looked out and confirmed that there was indeed a fire and that flames were shooting out the starboard engine exhaust. At this point, LT Longfellow and LTJG Clark were busy securing the starboard engine, maintaining single-engine flying speed, and climbing to an altitude that would give them a chance to settle down and regroup. Unfortunately, this was not to be!

During this entire evolution, the pilot was glued to the gages. As he turned to his downwind heading to commence his second approach, he noticed that his HARS compass had failed, rendering his RMI and attitude gyro useless and forcing him to request a no-gyro approach. No divert fields were available. The crew was committed to landing onboard.

LTJG Clark was providing valuable assistance to the pilot in helping him get lined up on the centerline by referencing the wet compass. This second approach, now single-engine, was flown to another pitching deck bolter. The pilot executed his single-engine bolter flawlessly. Finally, on the third approach, the E-2 made an OK 3-wire landing.

This was indeed an exhibition of extreme coolness and skill under conditions of constantly increasing stress and pressure. ◀

Z
ZULU

Single-engine

By LCDR David P. Erickson
VF-51

TOMCAT



AIRLINE pilots have known about it all along. Multi-engine prop drivers have it ingrained in their habit patterns, but the modern Navy fighter jock has just recently become acutely aware of this phenomenon. What is it? It's an engine failure while low and slow. Up until now, engine failure while low and slow for the fighter community has been a rather uncomplicated affair. If you were flying an F-8, your emergency procedures really left you with only one choice. If it was an F-4, the performance was reduced but not totally unmanageable. Then along comes the F-14 to complicate matters, for two reasons. First, the large displacement between engines produces a moment arm which has a much greater effect on thrust asymmetry than previous multiengine, centerline-thrust fighters. And second, where previously the lack of thrust was the only consideration in engine-out performance, now there are regimes where the tremendous thrust of the TF-30 gives you more push than can be safely controlled.

The problems with single-engine failure in the *Tomcat* can best be described in two areas: control and performance. **Control.** The difficulties in controlling the F-14 in the clean configuration with large thrust asymmetries has been well documented. It has been addressed for several years now, is a **boldface** item, and is prebriefed prior to every ACM engagement. But thrust asymmetries in the dirty configuration, especially in high gross weight takeoffs, have only recently been brought to the attention of fleet F-14 crews. High gross weight, or weight in general, has relatively little effect on aircraft controllability — but does play a significant role in aircraft performance. Controllability is a function of airspeed and rudder effectiveness as related to angle-of-attack (AOA). That means the limiting factor in your ability to control your single-engine *Tomcat* is a point where insufficient air flows over the rudders and you can no longer prevent aircraft yaw and yaw-induced roll. The AOA at which this occurs is relatively constant and equates to a minimum control airspeed, which is more accurately defined as minimum directional control speed. For the F-14, that speed is reached prior to reaching stall speed. Rudder becomes the primary control surface during critical single-engine flight.

Figure 1 shows that rudder power remains fairly constant



F-14 PA STABILITY AND CONTROL DATA

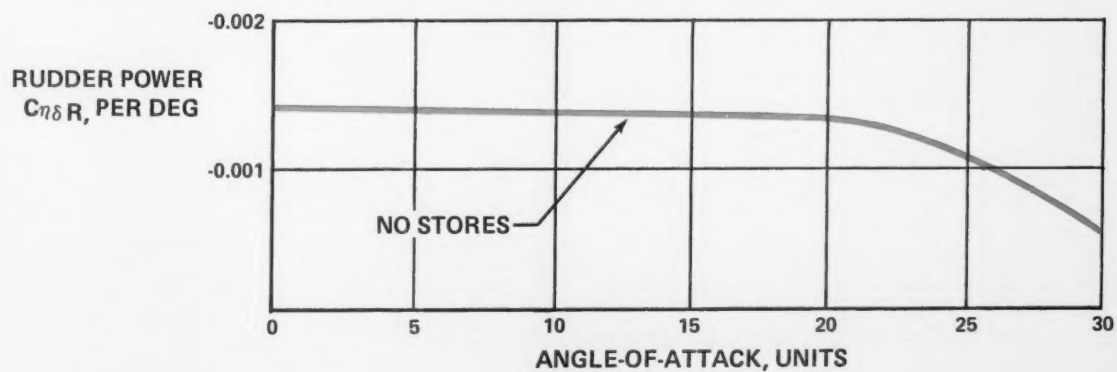


Fig. 1

F-14A EFFECT OF RUDDER AND SIDESLIP ON CONTROLLABILITY

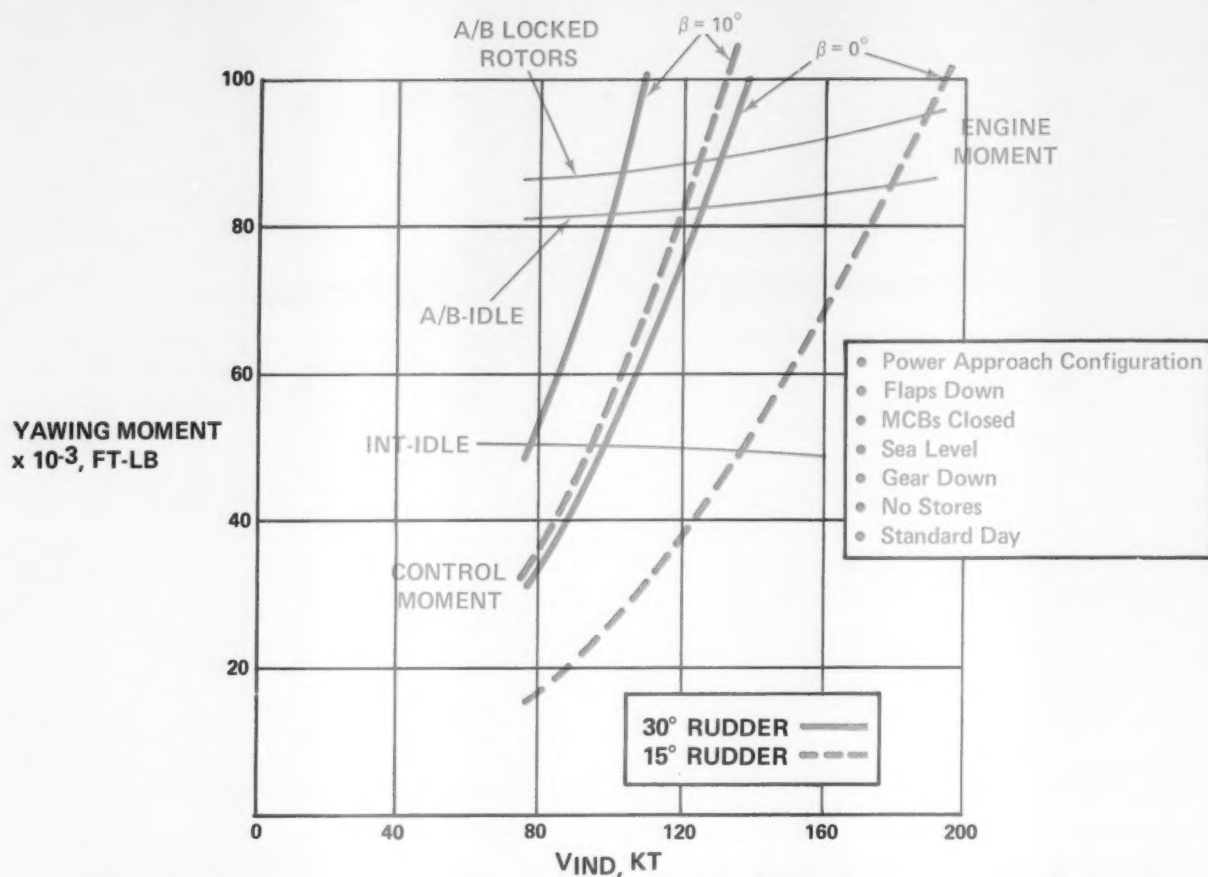


Fig. 2

until you exceed 20 units AOA. Beyond 20 units AOA, rudder power drops off sharply. So, stay below 20 units and you are OK, right? **Wrong!** Remember that although there is sufficient rudder power to control the aircraft at 20 units, this says nothing about aircraft performance, i.e., the ability to accelerate or climb or even to arrest a sink rate. Also, in the F-14, minimum directional control speed does not necessarily equate to the point where zero sideslip can no longer be maintained.

Figure 2 illustrates that the minimum directional control speed is lower with the aircraft stabilized at 10 degrees of sideslip. For a single-engine F-14 with 10 degrees of stabilized sideslip, full 30-degree rudder against the yaw, and an intermediate power setting on the good engine, speed is about 80 knots. It is important to note that if full power is now applied on the good engine, the aircraft would become uncontrollable because no more rudder authority is available to counter the

ensuing yaw and roll. The aircraft is controllable with full asymmetric thrust as long as the AOA is kept below 20 units and full rudder is applied against the yaw and roll. As airspeeds increase, so does rudder effectiveness and the ability to maintain directional control.

Performance. With the aircraft under control, attention can be shifted to performance. Performance is excess thrust which is a function of total drag, gross weight, density altitude, and temperature. Since we can't do too much about density altitude and temperature, suffice it to say that as density altitude and temperature go up, performance goes down. But you can do something about reducing drag and weight to give you the widest margin of excess thrust. Raising the gear reduces some parasite drag. Jettisoning stores reduces weight and some parasite drag and aids single-engine performance by a large margin. For a tropical-day, 67,000-pound cat shot, punching

off your two Phoenix, two Sparrows, and full auxiliary tanks can mean the difference between a 250 feet/minute descent and a 75 feet/minute climb at military rated power.

The biggest factor in drag at low airspeeds results from induced drag. Although small angles-of-bank away from the dead engine may aid in directional control, large angles-of-bank increase the stall speed and induced drag by large amounts. Figure 3 shows increased stall speeds and induced drag with increased angles-of-bank.

As you might surmise, your best performance occurs with the aircraft wings level.

Figure 4 illustrates that the best rate of climb for a single-engine F-14 is obtained at 10 units AOA, where excess thrust is at a maximum.

Summary

- The aircraft is controllable with full asymmetric thrust below 20 units AOA if full rudder is applied.
- Roll from asymmetric thrust must be countered with rudder and then lateral stick.
- Military power rate-of-climb performance is marginal.
- Large bank angles and off-speed conditions rapidly degrade rate-of-climb performance.
- Optimum AOA for maximum rate-of-climb performance is 10 units.

Initially, some performance may have to be sacrificed in favor of control. (This is not true if rapid rudder inputs are made and AOA is at a reasonable value.)

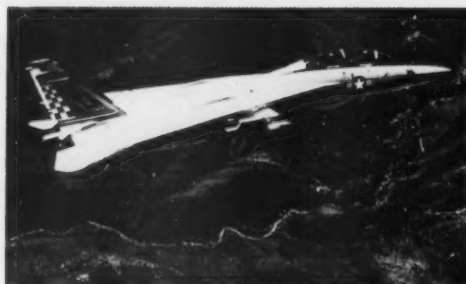
- NATOPS single-engine **boldface** takes all of the above into consideration.

Training. The multiengine pilot has trained for engine-out emergencies. Until recently, the F-14 community has been relatively unaware of single-engine controllability and performance. The majority of training which has taken place has involved aircraft not configured with stores, at light gross weights, and has emphasized normal approaches and landings. The high gross weights of the *Tomcat* during normal carrier operations was never considered. F-14 training needs to be expanded to include:

- NATOPS discussion as to the reasoning behind **boldface** procedures.
- 2F 95 and 2F 112 F-14 simulator engine-out training at maximum gross weights.
- Education of CV deck departments concerning the criticality of F-14 single-engine performance and the need to launch F-14s at the best engine stall margin. Depending upon launch weight, that means the aircraft is stabilized at military power or zone 5 prior to shuttle travel.
- Emphasis of responsibilities and crew coordination during engine-out flight.
- Discussion and understanding of terms and concepts associated with engine-out flight, i.e., refusal speed, critical engine speed, minimum directional control speed, etc.
- Emphasize simulated engine-out touch-and-goes in order to simulate single-engine approaches as well as single-engine flyaway performance.
- Development of a recommended maximum single-engine recovery weight.

BANK ANGLE/ DEGREES	LOAD FACTOR	% INCREASE IN STALL SPEED	% INCREASE IN INDUCED DRAG (v_k)
0	1.0	0	0
10	1.0154	0.7	3.1
20	1.0642	3.2	13.3
45	1.4142	18.9	100.0
60	2.0	41.4	300.0

Fig. 3



F-14 SINGLE-ENGINE RATE OF CLIMB

- 6 Phoenix + Tanks Racks, Takeoff Configuration
- Flaps & Gear Down
- Military Power $N_1 = W_m$, $N_2 = 0$
- Sea Level, Tropical Day (89.8°F)

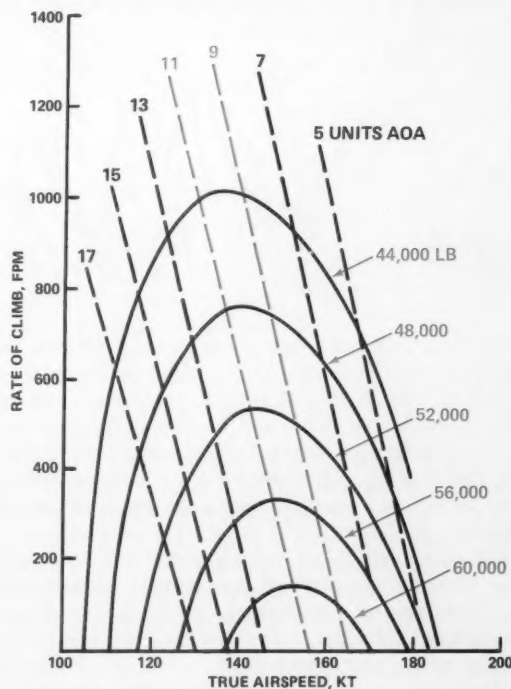


Fig. 4

True Confessions of the H



16

Hi there, Handsome, you don't know me, but I know you. I go along with you on every flight. You say you've never seen me before? Yes, Honey, I know. I'm very subtle and take many forms. Who am I, you ask? Why, I'm the Hanger Queen. Yes, I know, there's another girl around with a name like mine that frequents the end of the flight line, but she spells her name wrong and never goes out of the house. I'm the real thing!

But what would I want with a guy like you? Very simple, Dear. Every woman's got her ways, and my favorite activity is to **hang you up**. I'm an earthy person, and my favorite accomplices are fire and water. Give me either one of these, and I've got you where I want you.

What's my game, you ask? It's very simple! You strap on that multimillion-dinero machine of yours with your figura-

tive scarf into the wind and launch out into the *never-never*, knowing that frankly, my dear, you don't give a damn. At this point I simply call in one of my boys and tell him to open the element locker. In no time flat, you find yourself in an unscheduled rendezvous with Mother Earth, surrounded either by my exotic African girlfriend, *Flama*, or my Indian accomplice, *Lapping Wave*. No sweat, you say, you've been through the Dilbert Dunker, the Helo Egress Trainer, lots of cockpit egress drills, and a few dreams on the subject. You think you can handle it. No dear, *I* can handle it. This is where I am in my prime.

Let's say you're flying your whoppity-chopper out to USS GRUNTHAULER with a full load of fleet widgets, and on short final to the flight deck, I drop an earring into your No. 2 engine inlet. After a few bumps and grinds, you have

Langer Queen



turbine casserole and a pretty array of Christmas tree lights in the cockpit. In a fleeting moment of terror, you land into an ocean of liquid catastrophe, and you sense a dark fluidity seeping between your toes as the enchanting *Lapping Wave* introduces herself to you personally. Your omnipresent grace under pressure comes to the surface as your eye-level view rapidly descends below the emerald darkness.

Making your calm, fluid movement toward the pilot's escape hatch, you find that the handle is immobile. A searing white hot knife of alarm penetrates your chest as you realize the door has been *safety-wired* (not *shear-wired*) shut. Still, your keen sense of awareness tells you that other avenues still exist. You may be able to make it through the window itself or the copilot's exit or back to the main cabin door. Flash! You remember the snap link on your harness

D-ring! Groping for what seems like an eternity, you manage to get the snap link open, work it ever so slowly over to the blurry door handle, snap it over the safety wire, and break the safety wire free. Bravo! But curses, your head keeps jerking to the left as you work on the emergency door handle on your right. The JCS cord! Hurriedly, you disconnect the cord and it's away, but now the door won't push open against the water pressure! Okay — quick — check out the copilot's exit. It's open!! Or is it? It's so blurry, so dark now, and that water feels like two frozen steel dowel rods up your nose.

Okay, forget the *pussycat* routine; you're a *survivor*, remember? Quickly, get rid of the lap and shoulder belts. Oh Lord, can this be real? The bitter end of the left lapbelt is caught up in the inertial reel handle on the seat! The buoyancy has made you so tight against the belts that you can't get the buckle open! A little fight and *finally* it's loosening, it's free! You can hardly see, but you quickly cross the cockpit to the copilot's exit. Hey, where is he? Why isn't he here helping you? This isn't where you regress into wanting mommy, is it? Come on, Ace, struggle, get out!

Okay, that's it, right leg push down on the deck, left leg lift over the console . . . (that is the console, isn't it?) . . . but wait, your left leg is (gulp) caught up on the parking brake handle! (The unzipped pocket from which you pulled the trusty NATOPS checklist!) Grunt, strain, *rip* the pocket open! There, that's it. Now what? You're floating up towards your right side, and it's so tight in your armpit and groin. The right shoulder belt caught your LPA toggle — you're half-inflated! Oh man, you didn't check for the LPA deflation tool the PRs mounted above the glare shield. Go ahead, grab the glare shield with both hands. Grope on, move your head right over to the bracket where the tool's supposed to be. (It's dark as pitch, isn't it? So abstract, so indefinite, so threatening!) There, your hand's on the bracket . . . but the LPA puncher, it's gone!

You're weak now, you're fading. You're floating up against the circuit breakers on the top of the cockpit. So get out the flippin' copilot's exit! It's already open, isn't it? It's so cold, so hard to *think*. Go on, push, pull, get over there and get out! But wait! Your left thigh, your kneeboard, it's caught on the protruding wet compass! Open the strap. Open it! The little metal kneeboard latch button — find it, slide it! What do you mean you *can't*? What do you mean you swallowed water and your lungs burn like they're being torched? What do you mean you just saw your third-grade buddy? What do you mean . . . ?

"Hey! Hey you! Lieutenant! Come on, fella. How the Sam Hill do you expect to pass your NATOPS exam with your head on the cotton-pickin' desk?"

You wake from your dream in a cold sweat and sit back in your chair to mentally regroup. A quick, furtive glance around the room indicates that a few people are watching you, so you pick up your papers and continue your NATOPS exam. Your head is still swimming, thinking about the frightening experience you just had. Thankfully, it was just a dream! But as you open your NATOPS Manual to begin the open-book portion, you find a tattered piece of paper . . . Continued

Hints from the Hanger Queen

1. Submit a formal proposal for standardized installation of a LPA puncturing tool conveniently mounted for use in case of inadvertent LPA inflation. Preflight to ensure tools are present.
 2. Submit a change recommendation in accordance with OPNAVINSTs 4790.2B or 3710.7J to have the metal latch on the kneeboard replaced with Velcro.
 3. Always zip up all flight suit zippers prior to flight. Necessary items already should be out or pockets closed when the items are removed.
 4. Tuck free ends of shoulder belts under the shoulder belts themselves; tuck free ends of lapbelts under your thighs. Connect all straps properly, and have the PRs fix or replace faulty fasteners before flight.
 5. Preflight emergency exit handles for proper position. Make sure your squadron has a system to ensure shear wire (not safety wire) is used on the handles. (See "The Safety Wire Murphy Strikes" in the JAN '81 Maintenance Crossfeed. — Ed.)
 6. Have a memorized, rehearsed plan of escape. Do not rely on generalities. Example: H-46 fliers have a trim button on the cyclic stick called the C.D.R.B. (Centering Device Release Button). This most familiar abbreviation also spells out a logical egress sequence:
 - C — Cord (ICS/radio cord — disconnect)
 - D — Door (emergency exit door — open)
 - R — Reference Point (grab known reference points with one or both hands)
 - B — Belts (release shoulder and lapbelts)
 7. Use all possible means to teach and refresh these ideas: all-pilot meetings; safety standdowns; photographs; movies; regularly scheduled, controlled, blindfold aircraft egress drills on the flight line.
 8. Support and attend underwater egress training for all personnel who ride in Navy aircraft.
 9. Add innovative ideas of your own. Share them with the fleet. Submit NATOPS and publication change recommendations.
 10. Emphasize the importance of calmness. When you're in a calm state, say a prayer for those souls who didn't have the luxury of this daydream.
- All hung up over you!

The Hanger Queen



1980 CNO Safety Award Winners

COMNAVAIRPAC

VF-24
VA-146
VA-52
VAQ-132
VS-38
VC-5
HC-3
VAW-117
VP-4
HS-10
**HSL-35
*VA-128
NFWS

CG FMFPAC

*VMFA-212
HMH-361
HMA-169
*VMGR-152
VMA-214

CG FMFLANT

VMFA-451
VMA(AW)-533
VMAQ-2
HMH-461

COMNAVAIRLANT

VF-32
*VAW-121
VA-46
*VA-65
VP-10
VS-31
*HS-15
VRC-40
*VF-43
HSL-36
HM-14

CNATRA

VT-6
VT-19
VT-22
VT-24
VT-86

COMNAVAIRESFOR

VA-204
VF-302
VC-12
VP-66
VR-56
HAL-5

CG FOURTH MAW

VMA-124
HMH-772

19

CNO "Readiness Through Safety" Award

COMMANDER NAVAL AIR RESERVE FORCES
CHIEF NAVAL AIR TRAINING

Admiral James H. Flatley Awards

Group I *USS DWIGHT D. EISENHOWER
Group II USS SAIPAN

*Second consecutive year

**Third consecutive year

approach/may 1981

"Launch complete,

Photos by AMH1 Chris Jones



AH, those ever so familiar words that we hear from the air boss aboard today's aircraft carrier. But let's start at the beginning of the day and take a look at what is seen through my eyes — a squadron safety petty officer.

It usually starts at the sounding of flight quarters and a 1MC announcement for all air wing and air department personnel to fall in on the flight deck for a FOD walkdown. Some people curse, while others simply groan and wander up to the bow for a stroll and a chat with their buddies. Oops, did I say that? That's not the way it's supposed to be done. Nor are we supposed to be walking along with our hands in our pockets. That guy just walked right by a piece of FOD and didn't even see it. That's called looking but not seeing. Some of these people don't seem to realize that jet engines are expensive and hard to come by, not to mention the possibility of personnel injury or loss of an aircraft and crew. Ah, good, someone saw it and picked it up.

After the FOD walkdown, as I walk back forward, I notice three troubleshooters moving a nitrogen cart up the deck. The man on the cart's tongue is pulling it instead of pushing it. If he were to slip and lose control of the cart, he could injure himself or damage an aircraft. To make things worse, they just ran over a power cable, and the second class supervisor didn't say a word. Guess I'd better take the time to inform them of the hazards of their actions. They probably have never seen one of those cords break down, arc, and knock a man down. Well, now they know, but will they remember? Nobody knows until the next time.

Eleven o'clock — first launch. Boy, what a beautiful day. There goes the 5MC call for all unnecessary people to clear the flight deck and for those of us who remain to get into the proper flight deck uniform: helmets on and buckled, goggles down, sleeves rolled down, and vests buttoned. Sounds easy, doesn't it? But not so! Here it is 7 minutes later and I've already had to tell people to put their goggles on or to buckle their helmets. And then there's the

aircrew. Here's a perfect example: a pilot finishing his pre-flight inspection without his helmet on and his sleeves rolled up above his elbows, and an aircraft engine is turning nearby. I can't understand it. He's not setting a very good example for the troops. I sure got a dirty look when I reminded him about the boss's announcement. Maybe next time he won't need to be told.

It's getting close to launch time. We're coming into the wind. The yellow shirts had their brief from the aircraft handling officer and have their assignments. Aircraft are beginning to be moved around the deck, on their way to the cats. There's an F-14 RIO taxiing without his oxygen mask on. That A-6 pilot sure is using a lot of power to taxi. That's a good way to get someone hurt real bad. So many times I see flight deck personnel and flightcrews walk into an aircraft's jet blast without even looking to see if the aircraft is turning. That is bad enough, but if the pilot is carrying too much power, the results can be disastrous.

land aircraft."

By AMH1 Chris Jones
VAQ-135




Pretty good launch. I wonder how the recovery will be. We won't know, however, until we complete a respot and another launch. As the launch cycle is repeated, once more we make sure everyone is dressed in the proper flight deck gear and keep an eye out for unsafe situations. The air boss calls, "Land aircraft."

Walking aft to Fly 3, I spot a new blue shirt sitting down behind Tilley, the flight deck crash crane, where he thinks nobody can see him. His response to my query as to what he is doing there is, "Watching the recovery." As I escort him to a safe place, I try to describe to him what happens to an aircraft that hits the ramp — how it explodes into a million little bullets traveling up the deck at 130 knots.

Up forward, the yellow shirts are packing the birds in good and tight; things are going pretty well. But looking down the foul line, I see an awful lot of unnecessary people standing around — a very dangerous observation post. Looks like it's time to run a few blood-and-guts flight deck films on the ship's TV.

Well, things are starting to quiet down a little now, at least for a short time. The first launch and recovery were basically uneventful, even though we haven't been at sea for even a month. I wonder how many days it will take to once again become the fine-tuned team we were at the end of the last at-sea period?

I know that my job will never end while I'm on this flight deck, and I wish that every man up here felt the same way. If we remember our first days up here, and stay as careful now as we were then, we will have a lot less accidents and injuries. Complacency is our worst enemy. Every week I read the safety statistics from various Navy publications, and it seems to me that things are looking up. But until the mishap rate is zero, it's not good enough.

And so it goes, cycle after cycle, day and night, often for weeks at a time. The potential for disaster is tremendous, and yet, through vigilance and training, we can do it safely — make our own luck. 

21

DETAILS OF EVENT – THE AIRCRAFT WAS PARKED ON THE TRANSIENT LINE WITH A DOWNING GRIPE FOR LOW PRESSURE IN THE LANDING GEAR STRUT. PERSONNEL FROM THE FIELD SERVICES DIVISION PROCEEDED TO THE AIRCRAFT WITH A NITROGEN SERVICING CART THAT WAS OVERDUE FOR CALIBRATION. THE LANDING GEAR STRUT WAS INADVERTENTLY OVER-SERVICED, RESULTING IN DAMAGE TO THE STRUT AND FOLLOWED BY THE COLLAPSE OF THE AIRCRAFT ONTO THE WINGTIP.

CAUSE FACTOR – MAINTENANCE PERSONNEL ERROR IN NOT CHECKING THE CALIBRATION DATE OF THE SERVICING CART.

COMMENTS OF THE INVESTIGATOR – PERSONNEL IN THIS DIVISION HAD RECEIVED TRAINING IN THIS SUBJECT ONE WEEK PRIOR. SPECIAL EMPHASIS WAS PLACED ON CHECKING CALIBRATION DATES. THIS GROUND ACCIDENT WAS COMPLETELY PREVENTABLE, BUT EXPEDIENCY OVERCAME COMMON SENSE AND GOOD JUDGMENT.

By LCDR Ric French
Naval Safety Center

TRAINING

I could only shake my head slowly. It was like reading a mystery novel for the second time as I read the message. I already knew the ending and I was just looking for the clues.

A phone call to the investigator confirmed my suspicions. **The hour-and-a-half of required training referred to had been in a classroom using a blackboard.** Unfortunately, all educational predictors indicate that this type of training will fail to change anyone's skill level or attitude. "But this is the traditional way we train people! How can we keep from failing?"

Let's dissect this training and look at some pointers:

Hour-and-a-half. Deadly! Most people can't sit still for 50 minutes. To quote the Norwegians, "The mind can absorb no more than the seat can endure." So the question relates basically to attention span. How much can the seat (mind) endure? A good rule of thumb is to teach as many minutes as the average audience age in years. A group of 24-year-olds should be taught for about 24 minutes. Then give them

a break, or let them get up and move, or change teaching media. You can still teach the same amount of material and for the same hour-and-a-half, but now the time is broken down into digestible pieces.

In a Classroom. It is by far the most convenient and conventional setting for training, but for some subjects, a classroom can stop your training effort cold. The axiom here is that certain settings are conducive to certain types of training. Classrooms are good for training **only as a last resort.** The best training area is the real, live job site. If you can't take your students down to an aircraft; if you can't, for safety reasons, take them into the brazing shop; if security won't let you into that space – then consider the classroom. Exhaust all other possibilities first. If you are stuck with the classroom environment, read on about training aids.

Using a Blackboard. Training aids are always important. In the classroom, they become absolutely essential. The objective of a training aid is to improve the quality of instruc-



SHOULD BE REAL!

tion. They can do this best by presenting the reality of the equipment or work area. Well designed and properly used training aids can give unsurpassed, intense impressions. *Well designed* means that the aids will portray the real situation, environment, or equipment that the trainees will have to operate. An informal hierarchy of effective classroom training aids for this particular case may have looked like this:

Very good — Real piece of gear with calibration card and closeup slides.

Good — Mockup or model with calibration card and closeup slides.

Good — Real calibration card with slides of the gear and closeup slides.

Fair — Slides of gear, calibration card, and closeups.

Poor — Overhead projection.

Poor — Blackboard.

Poor — Feltboard.

Poor — Drawings and illustrations.

Poor — Easel board (flip chart).

Since current regulations don't allow video or movie production without great delay and multiple copies of paper, they were left off the list. Had they been included, they would have ranked in the *good* range.

Improvement. Let's upgrade the original training and reschedule the class. Here's a redesigned thumbnail lesson plan:

- Audience:

19-23-year-olds, less than 1 year experience, mixed male and female, mostly high school grads

- Objectives:

1. Identify an "in-calibration" nitrogen service unit
 - a. State where the calibration card is
 - b. Read the card correctly
 - c. State the calibration cycle
2. Identify an "out-of-calibration" nitrogen servicing unit
 - a. Enumerate possible incorrect entries on card
 - b. Recount some possible consequences of using out-of-calibration unit

- Training Aids:

Nitrogen servicing unit, current calibration card, slides of card, slides of accidents, calibration cycle chart

- Motivator:

Photos of recent aircraft mishap, unit, and card; use story-telling technique. NAVY LIFELINE article on problem of "out-of-calibration" equipment (10-minute time limit; use slides)

- Lesson:

1. Identify unit (10 minutes)
 - a. Proper model

- b. Proper hoses
2. All gather around unit — movement to maintain interest, sit back down (3 minutes)
3. Location of card (15 minutes)
 - a. Properly filled out card (slide)
 - b. Improper card (slide)
 - c. Calibration cycle — 3 months — use catch phrase: "Look see at 3"
4. Review of calibration card (5 minutes)
 - a. Proper — "What goes on this line?" (slide)
 - b. Improper card — "What's wrong with this card?" (slide)
 - c. Review catch phrase "Look see at 3" (for 3-month calibration cycle)

The above is simply one possibility of a lesson plan that can be used for this type of training. The important elements are that your training is well conceived, well presented, and as real as possible. ◀

Was fate



the hunter?

With respect given to the best selling novel of Ernest K. Gann, "Fate Is the Hunter," the undetermined cause of the abbreviated flight of Charlie Papa 702 may just fall into the category of Gann's title. The Viking crew's decision to elect a VFR takeoff under the existing and forecast conditions would eventually prove fatal.

THE crew of four that manned the S-3A on its final flight were highly qualified and very proficient in the air, particularly in type. The pilot had 1,500 hours total, over 700 in the S-3; the COTAC had over 3,700 total and 1,000 in type; the TACCO and SENSO had over 600 hours between them, mostly in this versatile and reliable bird. NATOPS checks, instrument ratings, and flight physiological training were all up to date for the crew. Normal rest and nutritional requirements were well within the prescribed guidelines for safe and efficient flight. All aircraft systems were "go."

The final factor—the weather: scattered clouds at 2,000 and 4,000; broken at 8,000; overcast at 25,000; visibility was 7 miles in light rain; and the winds were negligible out of the west. However, the prediction was for rainshowers and thunderstorms over the entire route of flight and in the vicinity of Homeplate. There was visible lightning around the airfield prior to takeoff time, but it appeared to be distant enough for the crew to elect a VFR takeoff on their VFR/IFR flight plan. No one will ever know why that particular decision was made, even though it was technically legal. The field was VFR, wasn't it?

Although the weather brief was officially given to CP-702's squadronmate, CP-711, the crewmen of 702 were observed standing at the weather desk while their playmates were being briefed. There was no validated DD-175-1 for the ill-fated crew of CP-702. Did they or didn't they get a good weather brief? Both flights were, however, filed on an ICAO Form 1801 flight plan with Base Ops. In any case, the crews of the S-3s headed for the duty hangar for their respective NATOPS flight briefings.

The crew of CP-702 was observed briefing in the hangar for what was scheduled to be a combined ASW/area fam

hop. The VFR/IFR flight plan was to take them from NAS Homeplate to the tactical operating area, to Midisland AFB, then back to Homeplate. The first portion was to be conducted under VFR; the latter portion, IFR. A normal, routine hop with no special requirements or expectations from the usually proficient ASW crew—at least until shortly after takeoff, when a series of unknowns began to set in.

CP-702 and 711 departed the line for their individual flights with 702 number one for takeoff. CP-711 would be 5 minutes behind. CP-702's departure was delayed by a departing C-141's lingering wake turbulence. Even though the surface winds were out of the west, they were reported negligible, so the S-3 requested and was granted a downwind takeoff to the east. The conversation between controlling agencies and aircraft tells what happened very clearly. No one really knows *why*.

CP-702: Tower — 702 for VFR takeoff.

Tower: Roger 702, cleared for takeoff. Contact Approach on 291.4, squawk 5702, maintain VFR.

CP-702: Roger, Tower.

CP-702: Approach, this is 702; request left turn downwind.

Approach: 702, maintain VFR until south of Big Island.

CP-702: Roger, Approach.

Approach: CP-702, advise you fly heading of 180 degrees.

CP-702: Roger, 180. (The radar track showed that CP-702 never came to a heading of 180.)

Intruder 503: Approach, Intruder 503 up 291.4 UHF. You got someone working flares west of the field about 5 miles?

Approach: Ah, negative 503.

Intruder 503: OK, but we saw what looked like a huge orange fireball through the clouds down there!

The rest is history. The radar plot of the flightpath

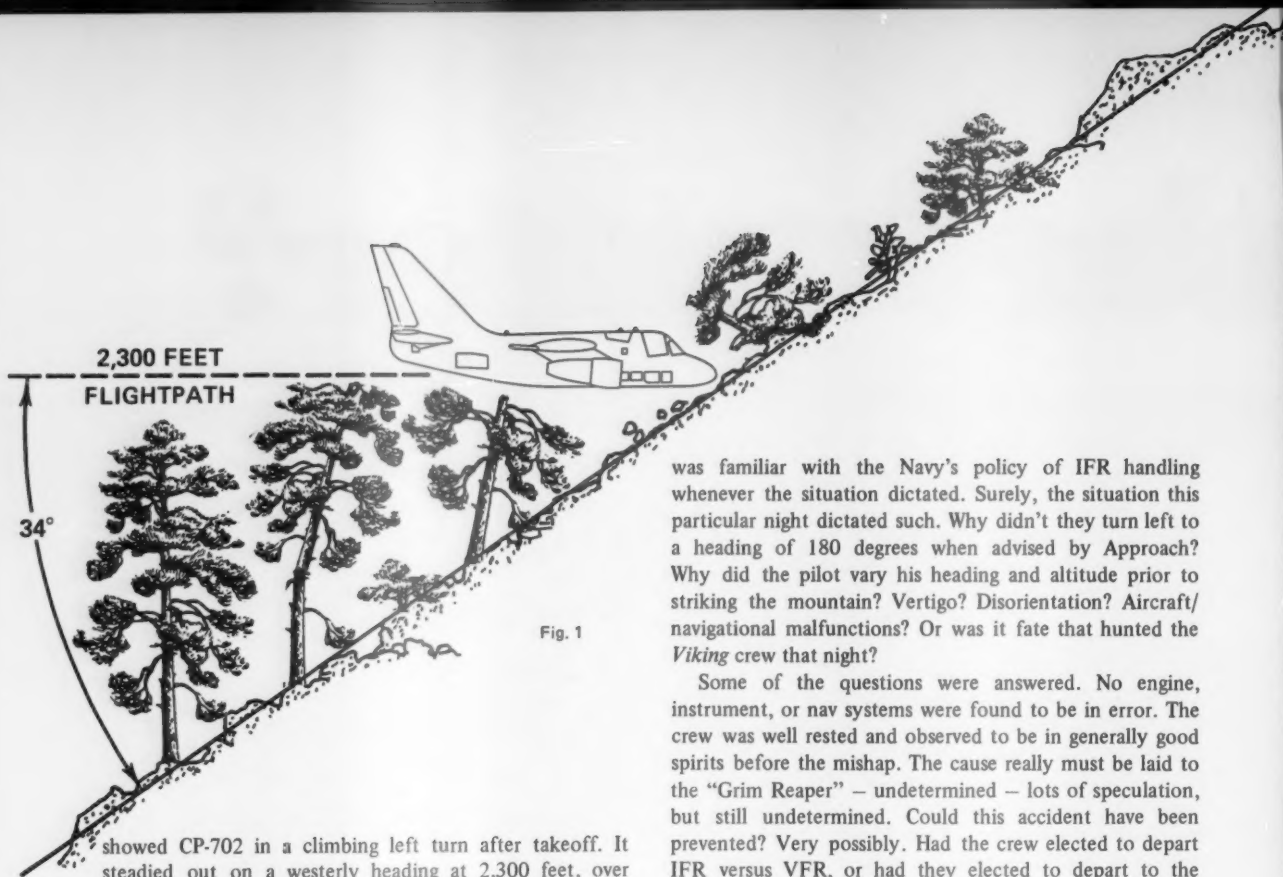



Fig. 1

showed CP-702 in a climbing left turn after takeoff. It steadied out on a westerly heading at 2,300 feet, over the bay. After a slight left turn, followed by a slight turn back to the right, the S-3 descended about 100 feet before impacting a mountain west of the island, 300 feet below its peak (Fig. 1). Scratch one *Viking* and its four seasoned aircrewmembers.

The questions remain — why? Why did this accident happen? Why did the crew elect to depart VFR, although legal in the technical sense, at night, with questionable weather, and in less than familiar surroundings? The crew

was familiar with the Navy's policy of IFR handling whenever the situation dictated. Surely, the situation this particular night dictated such. Why didn't they turn left to a heading of 180 degrees when advised by Approach? Why did the pilot vary his heading and altitude prior to striking the mountain? Vertigo? Disorientation? Aircraft/navigational malfunctions? Or was it fate that hunted the *Viking* crew that night?

Some of the questions were answered. No engine, instrument, or nav systems were found to be in error. The crew was well rested and observed to be in generally good spirits before the mishap. The cause really must be laid to the "Grim Reaper" — undetermined — lots of speculation, but still undetermined. Could this accident have been prevented? Very possibly. Had the crew elected to depart IFR versus VFR, or had they elected to depart to the east vice the west, the catastrophe may have been averted. Had they stuck to NATOPS, SOP, ATC procedures, solid judgment, and common sense in general safety matters, the flight may have turned out "routine." Following these established and usually successful procedures keeps pure fate from hunting us down on a day-to-day basis. Deviations from the planned are sometimes required, but for the most part, are really not warranted. Stick with the game plan — it's usually for the best! 

HELP WANTED

Only the best need apply

THE Blue Angels have openings available for enlisted personnel in the AMS, AMH, AME, AD, AE, AK, AS, AT, and PR ratings.

Interested applicants can arrange an interview with a representative of the Blue Angels by telephoning Senior Chief East at Autovon 922-2583 or commercial (904) 452-2583.

Personnel must be eligible and submit applications in accordance with the Enlisted Transfer Manual, Chapter 9.23.

Personnel are encouraged to submit an application as soon as possible and schedule an interview with the squadron's maintenance officer.

Further information can be obtained by calling the above telephone numbers or by writing: Administrative Officer, Blue Angels, NAS Pensacola, FL 32508.

Survival

Postejection/Bailout Rescue Procedures

In-water Rescue Sequences — with and without MA-2 Torso Harness, LR-1 Liferaft, LPA/LPU life preserver-configured aircrew — Using Rescue Sling, D-Ring with Gate, and Forest Penetrator with Flotation Collar.

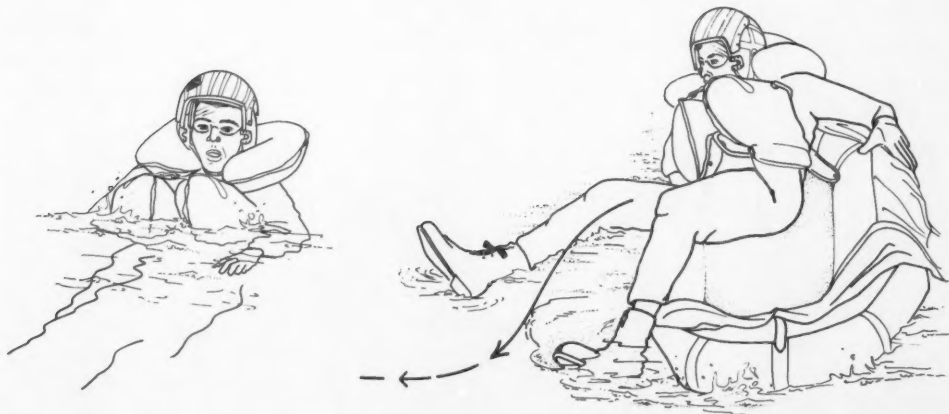
By CDR Jack Greear, MSC, USN
APTU — Norfolk
NAVREGMEDCEN, Portsmouth, VA

THE following scenarios describe step-by-step procedures for helicopter rescue from the water. The rescue situation is one in which the aircrewman has successfully signaled the rescue helicopter and is now ready for pickup, with the helo crew being unable to provide a rescue swimmer to assist the survivor.

Although some scenes depict MA-2 Torso Harness-configured aircrew, similar rescue procedures may be used by non-Torso Harness-configured aircrewmen. With the SV-2B LPA/LPU combination, the helo lift D-ring with Gate would be substituted by the helo hoist V-ring on the SV-2B.

These techniques are being published in advance of the NAVAIR 00-80T-101 Survival/Egress Manual so they will get to the fleet as soon as possible and so the project manager may receive any possible feedback before final printing. Please forward any comments to: Commanding Officer, Naval Regional Medical Center (Code APTU-417), Portsmouth, Virginia 23708.

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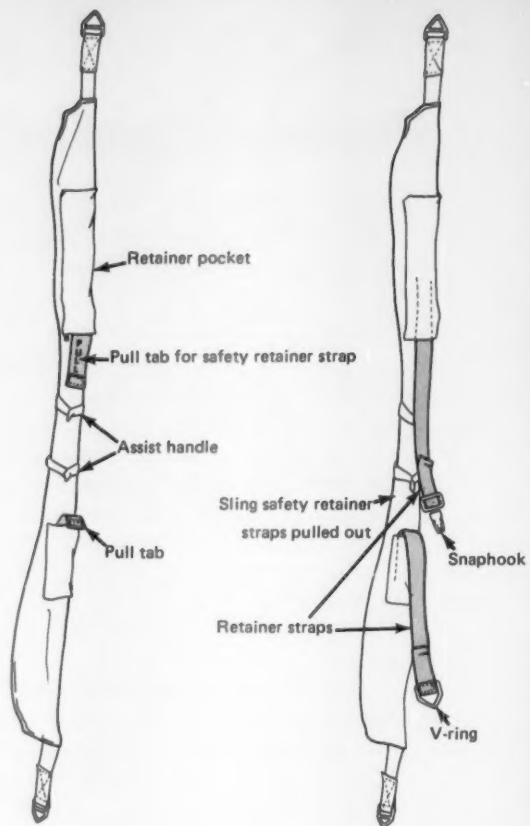


1. Stow or discard loose gear. Roll out of the raft on the right side (side with CO₂ cylinder). Swim away from the raft and lower helmet visor.

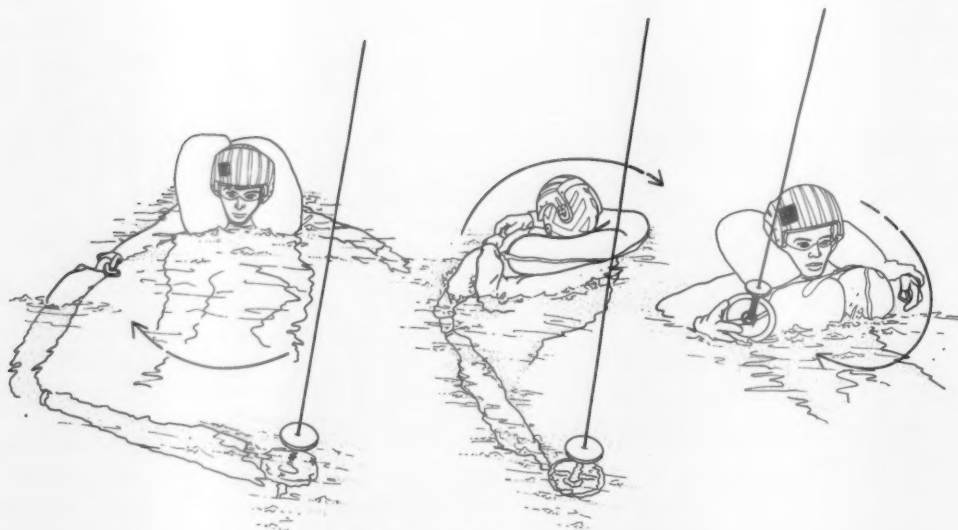


2. Remove the raft retention lanyard after the rescue device has been lowered.

Warning: Do not touch the helo hoist cable or rescue device until it has made contact with the water.



3. Procedures for Survivor's Sling/Horse Collar



3. (a) Grasp free end of sling
- (b) Swim in circle...
- (c) ...to rescue hook.



3. (d) Attach free end of sling to the large hook.

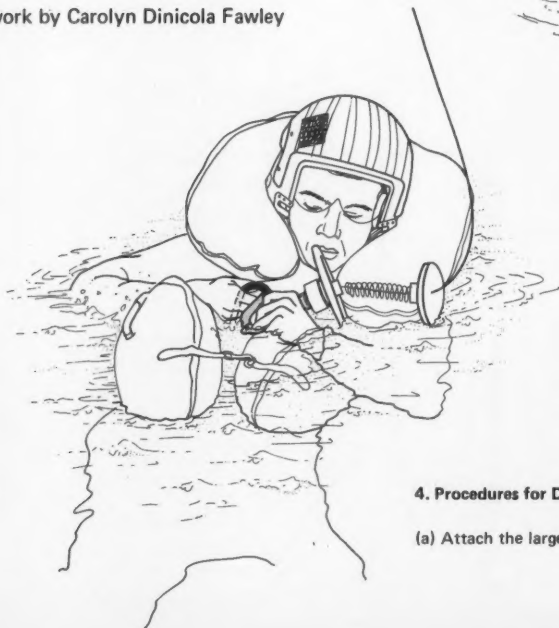
(e) Pull both safety retainer straps free and connect the quick ejector fitting to the V-ring on the opposite retainer strap. Pull tight.

3. (f) Ensure the horse collar is above the LPA/LPU waist lobes and high on the back. Wrap arms around the sling, keep head down, and cross legs. Give thumbs-up signal to hoist operator.



3. (g) Position of aircrewman during hoist.

Artwork by Carolyn Dinicola Fawley



4. Procedures for D-ring with Gate

(a) Attach the large hook to the helo lift D-ring.

NATOPS Evaluators for these techniques are:

LCDR C. T. Fowinkle, USN
and

ADC W. A. Nalley, USN
SAR Model Manager, Pensacola, FL
HC-16

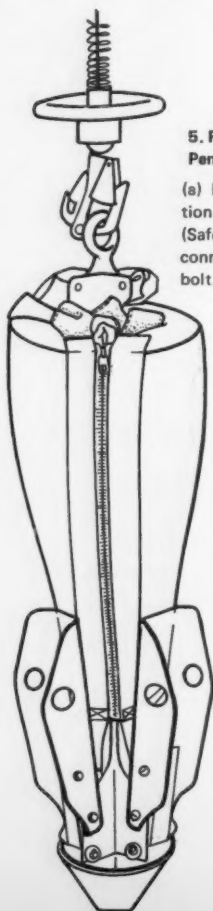


4. (b) Cross arms in front of chest and place head down and to the left. Give thumbs-up signal to the helo hoist operator.



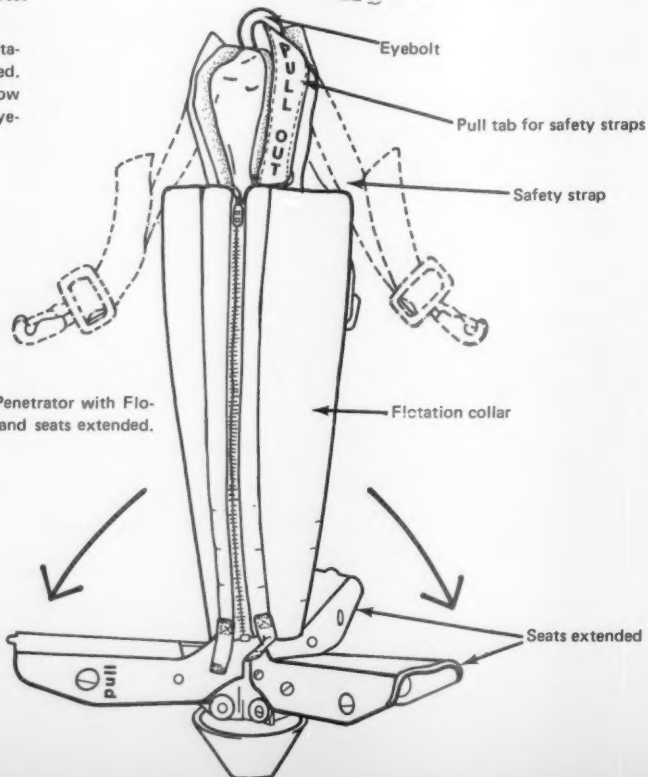
4. (c) Position of the aircrewman during helo hoist using D-ring with Gate.

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5. Procedures for Use of Forest Penetrator

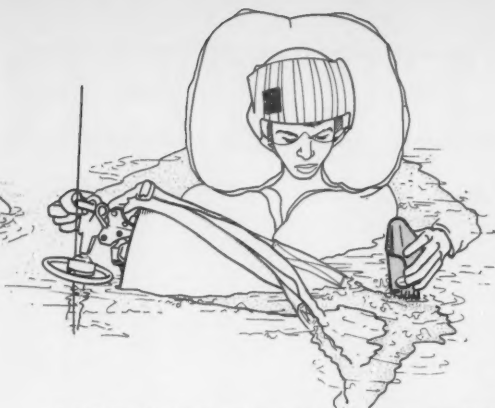
(a) Forest Penetrator with Flotation Collar and seats retracted. (Safety straps omitted to show connection of rescue hook to eyebolt.)



5. (b) Forest Penetrator with Flotation Collar and seats extended.



5. (c) Unsnap the LPA/LPU waist lobes.



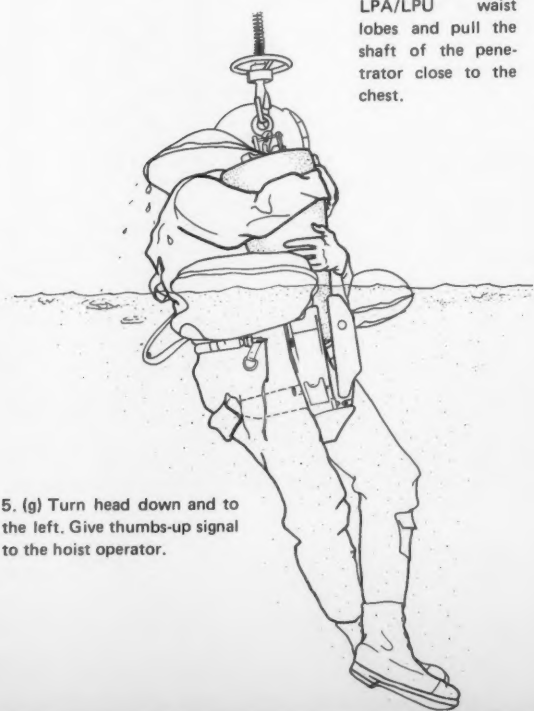
5. (d) For the use of one survivor, only one seat should be extended.



5. (e) Sit on the seat facing the flotation collar. Using the elbows, separate the LPA/LPU waist lobes and pull the shaft of the penetrator close to the chest.



5. (f) Pass the safety strap under the arm around the back and under the other arm. Connect the safety strap and tighten.



5. (g) Turn head down and to the left. Give thumbs-up signal to the hoist operator.



5. (h) Position of aircrewman during hoist with Forest Penetrator.

LETTERS

Shift Changes

NAS Pt. Mugu — I would like to add the following comments to CDR V. M. Voge's article in the JAN '81 issue, "Do You Have the Rhythm Blues?" Frequent changes of assigned shift have been shown to cause the same aging and life-span reduction as frequent time zone crossings. The common factor, it seems to me, is *stress*. Also, I would like to point out that it is equally stressful, if not more so, for a person who normally works nights to be reassigned to the day shift. This last point has been overlooked by every author I have read yet. Last, the workers at Three Mile Island were on "slow rotation," not on a shift of individual choice. That would be a perfect inspiration for creative incompetence *a la* Dr. L. Peter (originator of the Peter Principle).

AT1 W. VonWicklen, USNR-R(TAR)
IMA I-level Avionics Division

Improving the P-3

NAS Pt. Mugu — I recently completed 15 years of P-3 flying. Several months ago, while reading the morning paper, I was greeted by a picture and story about a P-3 inadvertent gear-up landing. That gave me the incentive to share a few thoughts with APPROACH, NAVAIRSYSCOM, and the P-3 NATOPS model manager. A few changes to the P-3 could save many millions of dollars, some aviators' careers, and perhaps a few lives.

An inexpensive warning horn wired to the gear warning light circuitry would help until funding is available for a more sophisticated system. I remember a little horn saving me from disaster in a T-34 back in VT-1. Surely P-3 crews deserve such a safety warning device in 1981.

I don't feel that the Radio (P-3A/B) or TACCO seat (P-3C) should be used as a ditching station. It should be obvious by now that props like to saw through this area when no longer mounted at their normal location.

An altitude alerting device such as used in modern commercial aircraft is needed. It may be costly, but I'll bet we could equip the entire P-3 fleet for less than the cost of the replacement aircrew and aircraft that we'll lose some day for lack of one.

We need a weather radar in the cockpit of the P-3A/B as these aircraft cruise at altitudes that put us in the worst area of thunderstorms. Often no SS3 (Radar Operator) is available or trained in inter-

preting for weather avoidance.

It's easy to "green board" a flightcrew for not following NATOPS after the accident, or to take satisfaction in saying "How could anyone be that dumb?" Unfortunately, that will not bring back a trained flightcrew or an expensive aircraft.

CDR M. D. Gordon, USNR-R
VP-0617

• The P-3 has suffered three inadvertent gear-up landings since its inception in 1962. All three were attributed to pilot error for not using the landing checklist. NATOPS says that when the landing checklist is interrupted, it must be reinstituted and completed in its entirety. This was violated in all three cases. At present, NATC Patuxent River is examining a system to help prevent gear-up landings.

The data from the only controlled P-3 ditching do not support your contention that the Radio or TACCO seat is a dangerous spot. However, when landing on *terra firma* in an emergency gear-up situation, your point is well taken.

RAWS provides the necessary aural warning, together with the radar altimeter's red light, if the aircraft's altitude is below the limit set. In the P-3, the altitude warning devices appear to be adequate if used correctly.

Installation of weather radar is needed but means additional bucks. We agree that SS3s should be on every flight. Without one, or someone who can operate the radar, an alternative is to abort the flight.

Aural "Wheels-Up" Warning for P-3

Moffett Field, CA — I am the NATOPS Officer in the Navy's oldest commissioned P-3 reserve squadron. We have an unblemished accident record over the 10-year history of the squadron. I am responding to an article in the Anymouse section of the NOV '80 APPROACH dealing with gear-up landing incidents/accidents in the P-3. I agree with the editor's comments at the end of the article that "There will never be a substitute for an alert crew!" I am appalled at the rash of unintentional gear-up landing incidents/accidents that the P-3 community has experienced in recent years, but I am even more appalled at the Navy's lackadaisical response to this serious dilemma. This attitude is reflected in your editorial comment. To blame a flightcrew exclusively for an oversight of this nature is to ignore a myriad of contributing factors,

not the least of which is a blatant landing gear warning system design defect, i.e., lack of an aural warning system. As a professional airline pilot for a domestic trunk carrier, I am aware that every transport category aircraft in service today flying under FAA Part 121 has installed in it a gear aural warning system that is not resettable once the flaps are lowered to the approach configuration. The FAA recognizes the necessity for this system even though airline crews have a great deal more flight experience than the average P-3 crew. Although the cost of retrofitting this system is certainly a consideration, it is a paltry sum when compared to the cost of a new P-3 and possible loss of human lives.

LT Jerry Hines
VP-91

Houston, TX — Your editorial comments on page 11 of the NOV '80 APPROACH show how out-of-touch with the "real world" the Navy safety program is at present. Patrolmouse is 100 percent correct when he states that the P-3 needs an effective landing gear aural warning system implemented immediately. Since the late 1950s, many aircraft have a noncancelable warning horn that is "ON" constantly whenever "approach" or "land" flaps are selected. This effectively eliminates the inadvertent wheels-up situation that frequently occurs when checklists are interrupted. Of course, this system can also be bypassed during multiple emergency drills (which require approaching with flaps up or at maneuver), but it cannot be deactivated at will by aircrews.

Within the present Navy inventory, there are many examples of airplanes that have this system — why not have NARF Alameda or Burbank copy the system in the TC-4C and modify the P-3 fleet ASAP. It might necessitate flying the majority of the low-altitude approach at maneuver flaps; that is a small price to pay for the added safety, and you might end up with some fuel savings to boot.

We operated the original P-3 aero prototype at NASA Houston for approximately 10 years and are familiar with the P-3 system overall. Lend some positive Safety Center support to a quick, inexpensive fix to this most essential element of the Navy air arm.

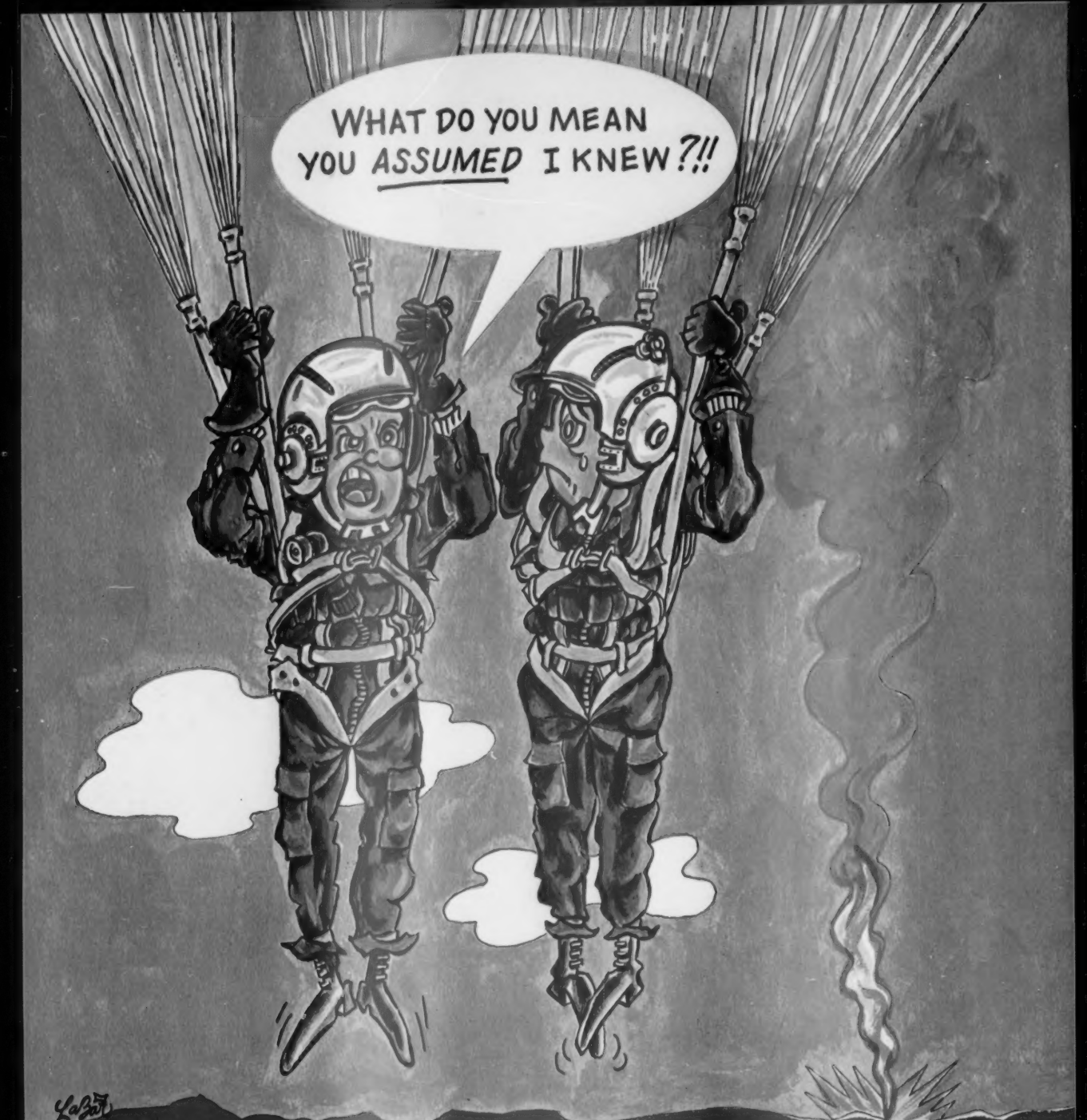
Joseph S. Algranti
Chief, Aircraft Operations Division
Lyndon B. Johnson Space Center

• Naval Air Systems Command has requested cost and schedule quotations from Lockheed Aircraft for incorporation of an aural "wheels-up" warning device for the P-3 similar to the system in CP-140 aircraft. Upon receipt of those quotations, a POM (program objective memorandum) submission will be made to OPNAV for funding consideration. ◀

PROP*

IS A FOUR-LETTER WORD

* So is dead.
Stay alert, stay alive!



WHAT DO YOU MEAN
YOU ASSUMED I KNEW?!!

**CREW COORDINATION MEANS
BRIEFING ALL ASPECTS
AND
POSSIBLE OUTCOMES!**

